CLAIMS

What is claimed is:

1. A method for a first platform and a second platform to obtain information that is descriptive of a relative location of the other, comprising:

establishing an initial antenna pointing direction of the first and second platforms such that the pointing directions are opposite one another, the first and second platforms having a common time reference; and

scanning each antenna in azimuth in the same direction in synchronism with one another in a plane referenced to a common reference plane until each antenna is within the other antenna's azimuth and elevation beamwidth during a scanning increment dwell time (T_{DWELL}).

2. A method as in claim 1, where upon completing a scan in azimuth in the plane, changing an elevation angle of each antenna pointing direction relative to the plane by equal and opposite amounts, and repeating the incremental scanning of each antenna in azimuth in the same direction.

3. A method as in claim 1, where the common reference plane is a plane that is tangent to the surface of the Earth.

4. A method as in claim 1, where a beamwidth of the first antenna differs from a beamwidth of the second antenna, where a minimum value of T_{DWELL} is common for both antennas, and where a minimum antenna step size is a function of the smallest beamwidth.

5. A method as in claim 1, where the initial pointing directions are referenced to an Earth-based coordinate system.

6. An acquisition method for use in establishing a line-of-sight communication path

between a first antenna of a first platform and a second antenna of a second platform, comprising:

defining a first spherical search space that is centered on the first antenna and a second spherical search space that is centered on the second antenna, each spherical search space being characterized by having lines of longitude corresponding to antenna azimuth pointing directions and lines of latitude corresponding to antenna elevation pointing directions, where an equatorial plane of each spherical search space is referenced to a plane that is tangent to the surface of the Earth;

establishing an initial antenna pointing direction of the first and second antennas such that the pointing directions are opposite one another referenced to an Earth-based coordinate system; and

operating within the spherical search space or a subset of the spherical search space by incrementally scanning each antenna in azimuth in the same direction in synchronism with one another, and upon completing a scan in azimuth, changing an elevation angle of each antenna relative to the equatorial plane by equal and opposite amounts in synchronism with one another, and repeating the incremental scanning of each antenna in azimuth in the same direction until each antenna is within the other antenna's azimuth and elevation beamwidth during a scanning increment dwell time (T_{DWELL}).

7. A method as in claim 6, where a beamwidth of the first antenna differs from a beamwidth of the second antenna, where a minimum value of T_{DWELL} is common for both antennas, and where a minimum antenna step size is a function of the smallest beamwidth.

8. Apparatus for use on a first platform and on a second platform for enabling each platform to obtain information that is descriptive of a relative location of the other platform, each platform comprising an antenna and coupled to the antenna a controller operating under control of a stored program for establishing an initial antenna pointing direction of the antenna such that initial pointing direction is opposite to the initial pointing direction of the antenna of the other platform, said controller further

incrementally scanning the antenna in azimuth in the same direction in synchronism with the scanning of the other antenna in a plane referenced to a common reference plane until each antenna is within the other antenna's azimuth and elevation beamwidth during a scanning increment dwell time (T_{DWELL}).

9. Apparatus as in claim 8, where said controller is responsive to completing a scan in azimuth in the plane for changing an elevation angle of the antenna pointing direction relative to the plane by an equal and opposite amount as the other antenna, and repeats the incremental scanning of the antenna in azimuth.

10. Apparatus as in claim 8, where the common reference plane is a plane that is tangent to the surface of the Earth.

11. Apparatus as in claim 8, where a beamwidth of the first antenna differs from a beamwidth of the second antenna, where a minimum value of T_{DWELL} is common for both antennas, and where a minimum antenna step size is a function of the smallest beamwidth.

12. Apparatus as in claim 8, where the initial pointing directions are referenced to an Earth-based coordinate system.

13. Apparatus as in claim 8, where the controller associated with the first platform and the controller associated with the second platform operate with a common time reference.

14. A computer readable media that stores computer instructions implementing a computer program to cause the computer to execute an acquisition method for use in establishing a line-of-sight communication path between a first antenna of a first platform and a second antenna of a second platform, comprising:

program instructions defining a first spherical search space that is centered on the first antenna and a second spherical search space that is centered on the second antenna, each spherical search space being characterized by having lines of longitude corresponding to antenna azimuth pointing directions and lines of latitude corresponding to antenna

elevation pointing directions, where an equatorial plane of each spherical search space is referenced to a plane that is tangent to the surface of the Earth;

program instructions for establishing an initial antenna pointing direction of the first and second antennas such that the pointing directions are opposite one another referenced to an Earth-based coordinate system; and

program instructions for operating within the spherical search space or a subset of the spherical search space by incrementally scanning each antenna in azimuth in the same direction in synchronism with one another, and upon completing a scan in azimuth, changing an elevation angle of each antenna relative to the equatorial plane by equal and opposite amounts in synchronism with one another, and repeating the incremental scanning of each antenna in azimuth in the same direction until each antenna is within the other antenna's azimuth and elevation beamwidth during a scanning increment dwell time (T_{DWELL}).

15. A computer readable media as in claim 14, where a beamwidth of the first antenna differs from a beamwidth of the second antenna, where a minimum value of T_{DWELL} is common for both antennas, and where a minimum antenna step size is a function of the smallest beamwidth.